

A REPORT ON THE USE OF FLUORIDE

BRICK AND STONE CLEANERS

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October 1962
revised August 1963

United States Department of the Interior National Park Service
Eastern Office, Design and Construction Philadelphia

See HSR neg. 157.1459

This is an informational report on the testing and use of chemical brick and stone cleaners which use ammonium fluoride in diluted form as a cleaning agent.

The purpose of the test was to evaluate the cleaning action of the Dunn Chemical Company's (Pompers and Rowland Avenue, Riverton, New Jersey) "P-56 Brick and Stone Cleaner" with respect to the restoration and maintenance of masonry buildings.¹

Previous attempts to clean accumulated dirt and grime from masonry surfaces have been less than successful. To preserve the surface of the brick it is desirable to avoid sand blasting or strong acids that are commonly used to clean commercial buildings. Less severe methods such as steam cleaning have proved inadequate and sometimes damaging. Steam cleaning of Old City Hall (Independence NHP) for example was discontinued last fall. After a month of intensive work on the south wall, the bricks and mortar could only be considered moderately clean and resulted in undesirable after effects. Efflorescence began to take place immediately. Attempts to remove the efflorescence with muriatic acid were unsuccessful. In addition, the steam cleaning so saturated the bricks with water that the plaster began to blister on the interior surfaces.

Thus when Mr. Huston Dunn of Dunn Chemical Co., Inc., recently demonstrated successfully (on a small scale) a brick and stone cleaner, we were interested in a more definitive test. The following is a report on that test.

Since the cleaning of Old City Hall remained incomplete, we decided to conduct the test on that building. A test area was outlined in chalk on the east or Fifth Street elevation of Old City Hall. The test area consisted of 12 sq. ft. of brick and 17.3 sq. ft. of dressed stone foundation. On 29 September 1962 a day-labor painter applied (with a regular paint brush) two coats of "P-56 Brick and Stone Cleaner".² The test area was then left to stand for 30 minutes, and then the painter began washing off the cleaner with a stiff bristle brush and tap water from a hose. The test area was photographed after the area had time to dry out (see illustration).

The result of the test was a thorough cleaning of the brick, mortar and stone within the test area. One gallon of cleaner covers approximately 100 square feet (two coats). The color, texture and stability of the masonry was apparently unaltered by the test.

¹The "P-56 Brick and Stone Cleaner" is similar to "Klenztone" manufactured by K & E Chemical Co., Inc., 16810 Miles Avenue, Cleveland 28, Ohio.

²Basic ingredient of the "P-56 Brick and Stone Cleaner" and "Klenztone" is ammonium fluoride, of the same family of fluorides used in drinking water. Fluorides make carbonaceous products water soluble (such as smoke-produced grime, soot, and other air-borne materials which settle on buildings).

Based on the satisfactory results obtained from this test, sixty gallons of "P-56 Brick and Stone Cleaner" were purchased from the Dunn Chemical Company to be used to complete the cleaning of Old City Hall.

The method used for the large scale operation followed that used in the test, except the first coat of cleaner was left for ten minutes before the second coat was applied. Twenty minutes after application of the second coat the solution was washed away with a stiff bristle brush and water from a hose. The results of this operation were similar to that obtained from our earlier test: a thorough cleaning of the brick, mortar and stone with no apparent change in the original color, texture and stability of the masonry, with the exception of a slight whitish haze that became barely perceptible once the process had a chance to dry completely.³

Based on the above demonstrations, we recommend that this cleaning chemical be adopted as a preferred method of cleaning old masonry surfaces until such time that a superior method might be successfully demonstrated.

The following procedures and precautions are suggested:

1. Apply two coats of UNDILUTED "P-56 Brick and Stone Cleaner," "Klenz-tone" or their equivalent with an ordinary paint brush. Allow one gallon of cleaner for every 100 sq. ft. to be treated.
2. Allow the cleaner 30 minutes to penetrate surface grime, then agitate with a bristle brush while rinsing with a low pressure spray of water. Allow surface to dry.

The cleaner is non-flammable, and harmless to clothing, plastics, rubber, wood, mortar, plaster and hard paint. Note: "P-56" will not remove paint from masonry surfaces. Previously waterproofed masonry will require more labor and cleaner to do the job.

Cover window areas with a plastic or some other protective cover. (Fluorides have an etching effect on glass and will remove second grade paints.) Note: This cleaner will kill grass, nearby shrubbery and trees unless unusual precautions are taken.

Caution should be taken as some people are allergic to the ammonium fluorides contained in the cleaner. If so, rubber gloves should be used when applying the cleaner.

One-quarter (1/4) cup household ammonia to two (2) quarts of water used as a rinse will neutralize any adverse effect to the skin.

IF TAKEN INTERNALLY: Baking soda, magnesia, chalk, or lime taken in water, soap and water, or tooth powder. (No emetic)

³Microscopic investigation of the "P-56" cleaner showed the white haze to be the result of a residue left by the process. A solution of sodium bicarbonate can be used to neutralize the "P-56" and thus remove the residue.